

## **REMARKS**

Reconsideration of the present application is respectfully requested in view of the foregoing amendments and the remarks which follow.

### **Status of the Claims**

Applicants have amended claim 16, 17, 18, and 24, and added new claims 25-27. Claims 3-9, 11 and 19-23 were previously canceled. Accordingly, claims 1, 2, 10, 12-18 and 24-27 are currently pending in this application.

### **Claim Objection**

Claim 24 was objected to an informality, in particular, “(eliding)” should be “(sliding)”. Claim 24 has been amended.

### **Rejection Under 35 U.S.C. § 112**

Claims 16-18 and 24 were rejection under Section 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter in which Applicants regard as the invention. Claims 16, 17, 18 and 24 have been amended to overcome this rejection.

### **Rejections under 35 U.S.C. § 103**

Two rejections were made under Section 103:

1. Claims 1, 2, 10 and 12-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pope, U.S. Patent No. 6,655,845, in view of Rubin, U.S. Patent No. 5,064,547, and further in view of Veerasamy, U.S. Patent No. 7,067,175. Applicants traverse for the following reasons:

First, in a low-friction sliding mechanism of the present invention, a low-friction agent composition is present between the sliding surfaces of a DLC coated sliding member (A) and a sliding member (B). One in which a base material is coated with a diamond-like carbon having a hydrogen content of 20 atomic percent or less is used as the DLC coated sliding member (A), whereas metal material, non-metal and/or coated material obtained by coating a thin film on a surface of the metal material or the non-metal material is used as the sliding member (B). The low-friction agent composition to be used contains at least one

oxygen-containing organic compound (C) selected from the group consisting of alcohols, esters, ethers, ketones, aldehydes, carbonates and derivatives thereof.

By virtue of combination of the low hydrogen content diamond-like carbon (having a hydrogen content of 20 atomic percent or less) coating film and the low-friction agent composition containing the above-mentioned specified oxygen-containing compound, extremely excellent low friction characteristics (excessively low friction coefficients) can be obtained as compared with that obtained by conventional combination of sliding member and lubricant, as shown in Table 1 and Figs. 5 and 6 of the present application. The excessively low friction coefficient obtained by the combination is, for example, at a low level of 0.029 or 0.037 as compared with a conventional high level of 0.132 or 0.148 (Comparative Examples) as shown in Table 1. Additionally, the excessively low friction coefficient obtained by the combination is shown in Figs. 5 and 6 and excessively low as compared with that obtained by the conventional techniques (Comparative Examples). Such excessively low friction coefficients are significant and unexcited results according to the present invention.

Second, regarding the cited references, Pope discloses a rolling bearing having a roller and a race whose surface is coated with polycrystalline diamond (see Abstract). Rubin discloses a lubricant composition containing saturated dicarboxylic acid and ester (alcohol) for the purpose of providing a lubricant with corrosion inhibiting properties (column 7, lines 13-26). Veerasamy discloses a DLC (ta-C) containing no hydrogen (see column 8, lines 35 and 36).

Neither Pope, Rubin nor Veerasamy teach the combination of the combination of a low hydrogen content diamond-like carbon (having a hydrogen content of 20 atomic percent or less) coating film and a low-friction agent composition containing the above-mentioned specified oxygen-containing compound, and the significant and unexpected results gained thereby.

Third, the Examiner's opinion that the combination of elements were known at the time the invention was made is not an allowable invention is noted. However, Applicants strongly disagree. As an initial matter, the Examiner bears initial burden of factually supporting any *prima facie* conclusion of obviousness in order to reject the claims under

U.S.C. § 103. According to MPEP 2143, exemplary rationales that may support a conclusion of obviousness include:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of known technique to improve similar devices (methods, or products) in the same way;
- (D) Applying a known technique to a known device (method or product) ready for improvement to yield predictable results;
- (E) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or two combine prior art reference teachings to arrive at the claimed invention.

Accordingly, to reject the claims under combination of known elements, the combination must yield “predictable results.” However, the Examiner recognizes that, for example, the lubrication oil of Rubin is for the purpose of preventing corrosion. When Pope and Rubin are combined, the motivation or prediction of reducing wear cannot be found in the combined references. Additionally, the DLC of Veerasamy is for the purpose of improving water repellency and preventing corrosion, not for the purpose of reducing wear. Consequently, the combination of Pope, Rubin and Veerasamy and the combination of Pope, Morway and Veerasamy do not teach or suggest the present invention of improvement in friction characteristics.

2. Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pope, U.S. Patent No. 6,655,845, in view of Morway, U.S. Patent No. 3,196,109.

Applicants traverse for the following reasons:

First, Morway discloses a lubricating grease containing sorbitan monooleate for the purpose of inhibiting corrosion (see column 3, lines 17 to 24).

Second, it clear that even Morway the combination recited in claim 24, as well as the significant and unexpected results gained thereby, as discussed above. To reject the claims under combination of known elements, the combination must yield predictable results. When Pope and Rubin are combined, the motivation or prediction of reducing wear cannot be found, as discussed above.

**CONCLUSION**

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application. The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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